ABSTRACT

Aim:

The aim of this study was to evaluate and compare the amount of apically extruded debris caused by two rotary instruments, namely, Hyflex CM and K3 which differs in their design feature, cutting edge rake angle.

Materials and Methods:

Eighty human mandibular premolars were selected with single mature root, single canal, single apical foramen, with minimam canal curvature. They were randomly divided into two groups of forty teeth each. Each group was instrumented using one of the two rotary systems: K3 and Hyflex CM rotary system. 6ml of distilled water was used as an irrigant. Debris extruded was collected in preweighed micro centrifuge tube containing distilled water. The debris collection apparatus were set according to Myers and Montgomery's experimental set up. The distilled water in the tube and extruded irrigant were allowed to evaporate by placing it in a dessicator. The weight of the dry extruded debris was established by comparing the pre and post instrumentation weight of micro centrifuge tube for each group.

Statistical Analysis: The mean, standard deviation of each group was calculated for both pre and post instrumentation weights. The intra group comparison was analysed with *paired t test* and the inter group comparison was analysed with *unpaired t test*. $p<0.05$

Results: All instruments tested produced a measurable amount of debris. There was statistically significant difference observed between K3 and Hyflex CM system ($P<0.001$).

Conclusion: Within the limitations of this study, it can be concluded that all instruments tested produced apical debris extrution. The Hyflex CM group which was a negative rake angled instrument, extruded a significantly higher amount of debris than a positive rake angled instrument K3.

Key words: Positive rake angle, negative rake angle, apical debris